Amendments to the Specification

Please replace the paragraph beginning page 6 at line 8 with the following amended paragraph:

The 3D position of one marker on an object is determined using a known 3D position of another marker, the linkage-distance between the two markers, and an image. The method thus requires knowledge of the 3D position of a seeding ~~maker~~ marker to initiate the 3D reconstruction. The seeding position can be determined from knowledge of one spatial coordinate and an image, or from three linked markers and an image of an object showing the three linked markers.

Please replace the paragraph beginning page 17 at line 9 with the following amended paragraph:

Calibration provides the data used to determine the image plane coordinate system, $\{o; u, v\}$, and the realizations of the reconstruction equations. The spatial directions (X,Y,Z) are selected before calibrating. Although the orientation of the spatial directions may be arbitrary, they are preferably ~~orientated~~ oriented so the determination of the seeding marker is simple. For now, it is assumed that the spatial directions have been selected, and that the Z direction is the coordinate direction most nearly parallel to the optical axis of the camera. The spatial origin, O, is not defined beforehand, but rather is determined from the calibration to avoid additional transformations that would otherwise complicate the reconstruction formulas.

Please replace the paragraph beginning page 20 at line 21 with the following amended paragraph:

Candidate dilation formulas are determined. First, the (u, v, Z) triplets for the dilation formula arguments Equation 1 are formed from the calibration data. The location of each marker image (in terms of the $\{o; u, v\}$ coordinate system) is coupled with the Z position of the calibration grid when its image was acquired. The (u, v, Z) triplets are paired with the (X, Y)

position ~~in~~ of the marker that produced the image. The geometry of the camera set-up and/or the characteristics of the (u, v, Z)–(X, Y) pairs are used to ascertain candidate parameterized dilation formulas.

Please replace the paragraph beginning page 21 at line 15 with the following amended paragraph:

Figures 7A and 7B illustrate parameterized dilation formulas for an aligned camera scenario, according to various embodiments of the present subject matter. Figure 7A shows the 3D scenario. In this case the camera 706 is aligned with the Z direction so R_o is normal to the image plane 708. Figure 7B is a downward view of the Y=0 plane in space, which is defined by rays R_o and $R_P^{Y=0}$. Point P in 3D is space is positioned at (X_P, Y_P, Z_P). Point P' is the projection of P into the Y=0 plane and has position $(X_P, 0, Z_P)$. Point p is the image of P in the image plane and has location (u_p, v_p). The X position of both P and P' in space is X_P and is given by $X_P=au_P(Z_P+b/a)$, where a and b are parameters determined from the calibration data and $au_p=\tan^{-1}(\underline{\theta_x})$, i.e. au_p is the slope of $R_p^{Y=0}$ relative to R_o. Y_P is derived similarly.

Please replace the paragraph beginning page 22 at line 12 with the following amended paragraph:

(4) $$M_x = \arctan(\underline{\theta}_x) = \frac{u^*}{z^*}$$

Please replace the paragraph beginning page 23 at line 7 with the following amended paragraph:

In Equation 6, $\Delta Z_{P,F}$ is expressed in terms of Z_P, the depth of P relative to the origin O. If b ~~be~~ is a second parameter such that b/a is the distance between F and O, then

(7) $$\Delta Z_{P,F} = Z_P + \frac{b}{a}.$$